THE A·I·B·S

bulletin

NEWS AND VIEWS IN THE BIOLOGICAL SCIENCES

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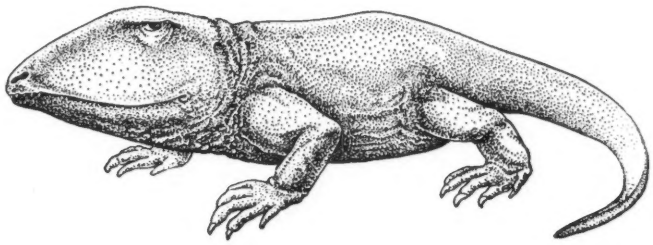

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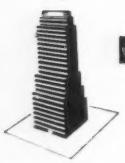

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Across the EDITOR'S DESK

• **THE NATIONAL SCIENTIFIC REGISTER.** As we pointed out in the January issue of the Bulletin, the AIBS is now mailing out questionnaires in the biological sciences for the National Scientific Register. Questionnaires have been mailed to the 24,757 members of the twenty AIBS societies and the five Federation of American Societies for Experimental Biology. An additional 7,000 questionnaires have been mailed and 2,000 more are being mailed to members of all other biological societies who have furnished AIBS their membership lists. These 33,000 biologists, however, do not represent all qualified persons who should receive the questionnaires. *All biologists with a B.S. or a B.A. degree plus two years' experience in a special field should be included in the Register. If any person with this background does not receive a questionnaire, he should write the Executive Secretary of AIBS for one immediately. AND—if* ***you*** *have received one and have not returned it, please do so soon.*

• **THE INTERNATIONAL COMMISSION FOR PLANT SLIDE EXCHANGES.** The chairman of this commission, Dr. D. A. Johansen of 861 East Columbia Avenue, Pomona, California, has requested AIBS to bring to the attention of its members a few facts about the commission which is a part of the Botanical Section of the International Union of Biological Sciences. The purpose of establishing this commission was that of providing an address where materials might be sent for processing and from which participants could receive in exchange any available slides they might desire, especially for taxonomic investigations. Any botanist or botany department may become a member of the commission by paying the annual fee of $10.00 in advance.

• **THE PURE CULTURE COLLECTION OF BACTERIA, YEASTS, MOLDS, AND ALGAE** is maintained at the Hopkins Marine Station of Stanford University at Pacific Grove, California. Dr. C. B. van Niel has asked that an announcement be made of the new February list of this extensive collection made with UNESCO support. Numerous species of Acetobacter, Azotobacter, Bacillus, Bacterium, Chromobacterium, Corynebacterium, Flavobacterium, Lactobacillus, Leuconostoc, Micrococcus, Mycobacterium, Propionibacterium, Pseudomonas, Rhizobium, Rhodopseudomonas, and Sarcina are among the bacteria listed. Of the yeasts and molds the genera include Aspergillus, Blastodendrion, Candida, Absidia, Ascoidea, Debaryomyces, Endomyces, Fusarium, Mucor, Neurospora, Penicillium, Rhizopus, and Saccharomyces. Algae included in the list are Chlorella, Coccomyxa, Coelastrum, Hormidium, Haematococcus, Prototheca, Scenedesmus, and Stichococcus. Dr. van Niel will mail this list to interested biologists who write the Pacific Grove address.

• **VOLUNTARY PROTECTION OF TECHNICAL INFORMATION.** The Department of Commerce offers a service to help the public guard against harmful release of technical information not subject to specific security restrictions. The Office of Technical Services of the Department will answer requests regarding technical data as to whether or not material should be withheld entirely, given limited distribution, or disclosed freely. As a scientist you are welcome to use this service. It is entirely your decision to follow or disregard the advice offered as a special governmental service. Requests for advice concerning the release of technical information, with manuscripts if possible, should be addressed to Office of Technical Services, Department of Commerce, Washington 25, D. C. Your enclosures with suggestions will be returned promptly.

• **THE NATURE CONSERVANCY** announces "Nature Sanctuaries in the United States and Canada: A preliminary Inventory" as the winter issue of *The Living Wilderness*, which is The Wilderness Society's publication. This is the first major project completed by the Nature Conservancy and culminates ten years' study by the Committee on the Study of Plant and Animal Communities under chairmanship of Dr. S. Charles Kendeigh of the University of Illinois. Copies may be obtained for 50 cents each by addressing Dr. S. Charles Kendeigh, Wright and Healey Streets, Champaign, Illinois.

• **THE UNIVERSITY OF MINNESOTA MEETING.** Because of a time conflict with another national meeting on the original dates, the AIBS-sponsored meeting of biological societies is changed to *September 10, 11, and 12.* Housing and dining facilities will be open on *Sunday, September 9,* to biologists coming to the meetings. The societies meeting at Minneapolis and their local representatives on the Committee on Arrangements are the following: American Society for Horticultural Science, W. H. Alderman; American Society of Plant Physiologists, Allan H. Brown; American Society of Human Genetics, to be announced; Botanical Society of America, E. C. Stakman; Ecological Society of America, Donald B. Lawrence; Genetics Society of America, Sheldon Reed; and the Mycological Society of America, Clyde M. Christensen. More complete information on the meetings will be published in the July issue of the Bulletin.

The Future of Section G (AAAS) and Botanical Meetings

JOHN S. KARLING

Purdue University

Excerpts of an address presented at the meeting of Section G, AAAS, Cleveland, Ohio, December 27, 1950.

THE title of this brief talk, "The Future of Section G and Botanical Meetings," indicates quite clearly that this is not a formal vice-presidential address although it is so listed in the general program of the American Association for the Advancement of Science.

I have chosen to introduce to you for consideration and discussion at this meeting a question, the answer to which I believe is very important to botanists at the present time. That question is, What is the future of Section G and botanical meetings? What I am about to say concerning plant science meetings may apply to zoological meetings as well. In the event that the animal science societies should decide to hold their annual meetings under sponsorship of the American Institute of Biological Sciences, Section F of the AAAS will then be faced with the same problem that confronts Section G at this and future meetings. If in this talk I use the term biological as often as botanical, it only means that I am thinking of the future of both animal and plant science meetings.

First, a few words about the background of the present situation as it relates to Section G. As all of you know, the American Institute of Biological Sciences was formally organized in 1947 to "assist societies and other organizations in such matters of common concern as can be dealt with most effectively by united action."

In 1948, the AIBS sponsored the annual meetings of the plant and animal science societies in Washington, D. C., after it became apparent that the AAAS would not do so. In September of 1950, all but two national zoological societies and one botanical society met at Columbus, Ohio, under auspices of AIBS and apart from the AAAS. The AIBS will sponsor a similar meeting at the University of Minnesota in 1951. A 1952 meeting will be held at Cornell, and the University of Wisconsin has invited the AIBS to sponsor a 1953 meeting in Madison. On the other hand, the AAAS, of which Section G is a part, will meet after Christmas at Philadelphia, St. Louis, and Boston in 1951, 1952, and 1953, respectively. These two organizations, accordingly, plan to sponsor meetings at different times of the year in widely separated localities.

The Botanical Society of America, Inc., has voted to hold its annual meetings and programs for 1951, 1952, and 1953 under the sponsorship of the AIBS. Because of its broad organization and close ties with other botanical societies, it will probably draw most of the plant science organizations with it to these meetings. The events now happening with affiliated biological societies are a repetition of those which occurred in relation to the Chemistry, Physics, Geology, and Psychology societies. Although the biological societies are affiliated with AAAS, they now hold their annual meetings and programs at other times and places. The botanical and zoological societies made up the last large group of affiliated societies to meet annually with the AAAS.

I believe the separation of the annual meetings and program of the biological societies from the AAAS is an excellent decision and will benefit the AAAS, the AIBS, and biologists in general. The number of scientists has increased tenfold in the last quarter century. As a result, the Association's membership has also increased, and this organization has become so large that it can no longer meet as a whole in any part of the country it desires. It has been forced to confine its annual meetings only to those cities which have sufficient hotel facilities. Even large cities, at least during the Christmas holidays when the Association usually holds its annual meeting, are unable to provide completely adequate and satisfactory hotel facilities and meeting rooms. The withdrawal of the affiliated biological societies from the annual meeting of the AAAS should alleviate this congestion considerably. It is to be hoped that the Association will not try to compensate for withdrawal of the biological societies from the annual meeting by expanding in other directions. We must bear in mind that the quality of a meeting is not always correlated with the number of registrations.

The benefits of this change to the biological societies will be great. The present plan of the AIBS is to hold its meetings immediately after Labor Day on the campuses of universities instead of in hotels in large cities. This will permit the use of dormitories for lodging, meeting rooms, and dining halls at times when students are away from the campus. This means lower costs all around. Obviously, the primary purpose of the annual meetings of any society or organization should be to foster the development of young

scientists by providing them with the best opportunity for presenting their own researches, hearing and discussing those of others, and for meeting other scientists in their own fields.

Under the present system of holding meetings in hotels in large cities immediately after the Christmas holiday season, however, the cost of hotel rooms, daily meals, and banquets is almost prohibitive to graduate students and teaching assistants with little or no income. As a consequence, comparatively few are able to attend, so our societies are not adequately meeting our responsibilities in this direction. By meeting on campuses of universities, the AIBS can keep costs to a minimum and thereby enable students to attend. Meetings in early September, when weather conditions are more favorable than in December, permit students to group together and drive to the meetings in cars at minimum transportation cost.

In an even broader sense, the sponsorship of all plant and animal science annual meetings by the AIBS is a further step in unifying the biological sciences. To my way of thinking, such unity will not detract from the AAAS.

What is the future of Section G and botanical meetings? I think the future is very bright indeed if we take advantage of present opportunities. Some botanists seem to deplore the attempt to develop programs in Section G on grounds that they might compete with those of the annual meetings of the individual societies and for such reasons believe that sectional programs in the AAAS should be abandoned entirely by botanists. This is a short-sighted attitude, in my opinion, which overlooks the unique opportunity presented to biologists by the developing situation. If the present trend continues and becomes established, botanists and zoologists will have the splendid chance to develop two types of programs annually in widely different parts of the country at different times of the year. What better opportunity could be presented!

The number of botanists and zoologists is so large, the research being conducted is so extensive, and the requests for places on the annual programs of the individual societies are so numerous that it is difficult to accommodate them at one large meeting. The science of biology has become so extensive that we need several organizations to accommodate our requirements. The AIBS and AAAS can help to fill this need through close cooperation, and biologists will be short-sighted indeed if they do not utilize their opportunities.

It must be emphasized, however, that these two organizations should not compete for the sponsorship of the biologists' annual meetings, nor should the AAAS attempt to develop sectional programs that will detract from the AIBS programs. Such a policy is unwise and might become disastrous. Their programs should be of a different nature so that they do not detract but complement each other. There is no reason why they cannot do so. At least for the next three years, the AIBS and AAAS will meet more than a thousand miles apart and be separated almost four months in time. Accordingly, each organization can serve the locality in which it meets. For example, in the coming year there doubtless will be many biologists from the Atlantic seaboard who cannot attend the AIBS meetings in September at the University of Minnesota; they will have the opportunity to attend a different type of program in Section G of the AAAS at Philadelphia in December. A similar situation will probably exist in future years.

Under this arrangement of meetings at different places and times of the year, the annual programs of the biological societies should be held in September on university campuses under the auspices of the AIBS, the organization which more specifically serves the needs of these societies. Then these societies should co-sponsor programs under sections F and G of the AAAS at the December meetings. I repeat that the AAAS programs should not compete with those of AIBS meetings but should complement them. There should be a minimum of contributing papers, and the programs of sections F and G should consist largely of outstanding panel or round-table discussions, symposia, and invited papers.

In past years when most of the biological societies met with the AAAS, it was impossible to hold more than one half-day session each of Sections F and G, but now that the presidential address, contributing papers, banquets, and so forth of the individual societies have already been presented at the AIBS meetings, the symposia and panel discussions of Sections F and G can be expanded to several more sessions.

This proposed policy of the biological societies co-sponsoring programs under Sections F and G when they hold their annual meetings at other times of the year is not without precedent. The Geological Society of America, the American Chemical Society, and the American Institute of Physics lend their active support to sectional programs although they do not meet with the AAAS. Furthermore, co-sponsorship has many broad advantages to biologists. Besides providing accommodations for biologists who cannot attend the AIBS meetings, it insures representation of biology among the other sciences at the AAAS meetings and provides joint programs with other disciplines.

My conclusions to these brief remarks are that the future of Section G and botanical meetings is very promising if we adopt a broad, forward-looking policy that provides the greatest opportunities to biologists and biological societies and also recognizes and insures the autonomous character of each society as well as the AIBS and the AAAS.

Handbook of Biological Data

THEODORE C. BYERLY

Chairman, Committee on the Handbook of Biological Data

THROUGH its Committee on the Handbook of Biological Data the American Institute of Biological Sciences, in completing a contract with the Air Matériel Command, is preparing a reference handbook of basic tabular data drawn from the various fields of biology. This report outlines the objectives of the work and the progress made on it to date.

The Handbook Committee consists of twelve members appointed in 1949 from different fields of biology by Dr. Ralph E. Cleland, then chairman of the AIBS. The committee has appointed Dr. Errett C. Albritton to serve as editor and has prescribed (1) that the first edition shall be limited to the *most-needed* * reference material and (2) that all data included must be *authoritative.*

To determine the need for material in the handbook, the committee has solicited suggestions from biologists in every field and has collected more than 4000 suggested titles of tables. Elimination of duplicates will reduce this number to about 1000. Three hundred proposed table titles have been submitted for evaluation to a specially selected group of biologists known as the Panel of Appraisers. Representative of the nation's estimated 85,000 biologists, the panel is a mathematically balanced sample group whose composition has been determined from records of the Office of Scientific Personnel.

Members of the panel are asked to rate each proposed table title either A, B, C, or D on the basis of personal need. Tables receiving an average of B or higher will be published in the first edition of the Handbook. This method of selection precludes favoring one biological field over another.

Already it is clear that panel members are indicating need for basic data outside their own fields of specialization. This finding follows an early prediction, made by the publishers of two well-established scientific handbooks, that the principal use of the book will be to supply the specialist in any chosen field with basic data from other fields.

As work on the book continues, a monograph of tabular data on Blood is being prepared. This will be published soon by the Air Matériel Command as a technical report (No. 6039). The panel will be asked to select the most-needed tables from this publication for inclusion in the Handbook. The report on Blood will include 20 tables on blood groups, 10 on coagulation and bleeding phenomena, 25 on the formed elements of blood and bone marrow, 10 on electrolytes and mineral constituents, 5 on blood gases, and 20 on the organic constituents and physical properties of blood, making a total of more than 90 tables. Valuable "laboratory" experience has been gained in the work on this monograph, experience that will be useful in subsequent work on the Handbook.

The problem of authoritativeness has been one of major concern to the committee. Who, for instance, should be entrusted with responsibility for preparing a table on blood hormones, giving reliable quantitative data for whole blood, cells, and plasma? Who, in the further work, shall prepare a table of the viruses affecting plants of economic importance, giving their effects and measures to combat them? The first problem is clearly a task to be performed by a group of endocrinologists who have specialized in quantitative measurements of hormone concentrations; the second calls for expert knowledge found only among phytopathologists. The Handbook Committee, having members drawn from different fields of specialization, determined at the beginning that it should not undertake to compile tables but should give each table to a group of investigators currently working in the special field. Such groups have been designated contributor-reviewer committees.

Each table prepared for the Handbook calls for creation of a separate contributor-reviewer committee. In the task of selecting experts on each table subject, the Handbook Committee depends on the counsel of advisers in each of the biological societies. It is noteworthy that even if these advisers are able to recommend only one person to work on a selected table, that person can then be relied on to supply a sufficient number of names of other current investigators in the subject for a complete study, including representatives of opposing schools of thought. The Handbook Committee then asks one or more investigators to prepare the table and submits it to others for review. The Handbook budget has no provision for meetings of members of the contributor-reviewer committees. All work is carried on by correspondence; the Handbook Office serves as a central assembling and distributing agency.

Seldom does the critical reviewer of a table fail to suggest some change. When all reviews have been received, the suggested changes are embodied into a second draft of the table. The table with all its changes again must pass the critical review of the group of experts. Items of data on which the group cannot agree are either removed or are qualified in footnotes. The table is ready for publication after all group members have approved it.

* The first edition is planned to a 500-page limit.

To insure authoritativeness the Handbook Committee recommends to contributor-reviewer groups that they examine each item of data in the light of the following seven requirements:

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1. An item of data must be reproducible, within reasonable limits, by competent investigators independently of the original observer.
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3. The number of measurements or observations must be sufficient to yield a stable average (in the case of numerical data, a mean with small standard error).
4. The item of data should be consistent with other established fact.
5. The author should be, or should be directed by, an investigator of established reputation.
6. Publication of the item of data should be in a journal of sound editorial policy.

Implicit in requirement No. 1:

7. Items of data must be checked against original sources to find and correct errors made in copying.

The Handbook will have an important feature growing out of the well-known variability of biological data. This feature is that every mean value will be accompanied by suitable information, if available, on the variability of single measurements.

Consideration has been given by the Handbook Committee to the common practice of publishing, with each mean, the standard error and the number of measurements. The Committee, although recognizing the value of such information for analysis of data at the stage of original publication, has decided that the reference needs of a person consulting a handbook will best be served if the book furnishes explicit information on the *range of variation.*

Whenever possible, therefore, the Handbook will give for each variable, in association with the mean, the upper and lower limits of the ordinary range of variation of single measurements. This range is known statistically as the 95 per cent range. It excludes the extremely low 2.5 per cent and the extremely high 2.5 per cent of measured values. A common estimate of the limits of this range is that it is twice the standard deviation above and below the mean. This is, however, only one of several methods of estimate and is inapplicable to skewed distributions. In every case, the Handbook will present the best available estimate.

A sample table from the monograph on Blood follows:

Sample Table

(Because of lack of space, footnotes have been omitted.)

81. BLOOD HORMONE CONTENT

	Constituent	Animal	100 ml Blood (B) 100 ml Plasma (P)	Value	Range
	(A)	(B)		(C)	(D)
1	Adrenocortico-	Man	B	<15 μg[2]	
2	trophic H[1]	Rat	B	<15 μg[2]	
3	Androgen[3]	Man	P	2.8 mg	2.2-3.4 mg
4	as Testosterone[4]	Woman	P	2.8 mg	2.1-3.2 mg
5	Chorionic Gonado-	Woman, pregnant	P	14000 iu	7000-60000 iu
6	trophic H.[5]	Woman, pregnant[6]	P		400-1000 iu
7		Man	P	0.23 mg	0.11-0.42 mg
8		Woman	P	0.28 mg	0.13-0.42 mg
9	Corticosteroids[7,41]	Dog, male	P	0.27 mg[37]	0.12-0.38 mg
10		Dog, female	P	0.22 mg[37]	0.12-0.38 mg
11		Rat	B	0.33 mg[38]	
12		Man	B	+	
13	Epinephrin[8]	Cat	B		1.6-3.1 μg
14		Rabbit	B	8.4 μg	
15		Woman, pregnant[9]	B	0.22 μg[11,12]	
16		Woman, pregnant[10]	B	0.55 μg[11,12,40]	
17		Cow	B	0.3 μg[12,14]	
18	Estrogen[3]	Cow	P	0.25 μg[11,12]	
19	as Estradiol	Cow, pregnant[13]	B	0.38 μg[12,14,15]	
20		Cow, pregnant[13]	C	0.2 μg[11,12]	
21		Cow, pregnant[13]	P	0.1 μg[11,12]	
22	Follicle Stim. H.[16]	Woman, pregnant	P	+	
23	Gonadotrophins[17]	Woman[18]	P	+	
24	Growth H.	Man, ♂♀	P	+	
25	Insulin	Man, after eating	B	0.8 μg	
26		Dog, Rabbit, fasted	B		0.35-0.45 μg
27	Intermedin	Man	P	+	
28	Lactogenic H.[19]	Woman, postpartum	P	+	
29		Mare, pregnant	P	2 ru[39]	
30	Luteinizing H.[20]	Woman, pregnant	P	+	
31	Nor-epinephrin[21]	Man, Cow	B		2-4 μg
32	Parathormone	Man, Dog	P	+	
33	Pitocin[22]	Man	B	1 u[22]	
34	Pitressin[23]	Man	B	0.01 u[24]	
35	"Pregnant Mare's Serum"[25]	Mare, pregnant	P		4300-35200 iu
36		Woman, pregnant[26]	P	530 μg[27]	30-700 μg[27,28]
37		Woman, luteal phase	P		20-520 μg[27,29]
38		Monkey, luteal phase	P	600 μg[27]	
39	Progesterone	Rabbit, pseudo-preg.	P	600 μg[27]	
40		Mouse, pregnant	P		500-1000 μg[27,30]
41		Rooster	P	300 μg[27]	
42		Hen, ovulating	P	300 μg[27]	
43		Woman, pregnant	P	+	
44	Relaxin	Rabbit, pregnant	P	1000 GPU[31]	
45		Guinea Pig, preg.	P	50 GPU[31]	
46		Sow, pregnant	P	200 GPU[31]	
47		Man, adult	P	5 μg	4-8 μg
48		Man, 3-13 yr.	P	5.5 μg	4-7 μg
49		Dog	P	2.3 μg	2-4 μg
50		Rat	P	3.2 μg	3-4 μg
51	Thyroid H.[32]	Mouse	P		3-4 μg
52		Guinea pig	P		2-2.5 μg
53		Horse	P		2.4-4.8 μg
54		Monkey	P		4-8 μg
55		Chicken	P		3-4 μg
56		Man	B	0.09 JSU[34]	0.05-0.15 JSU[34]
57	Thyrotrophic H.[33]	Man	B		3900-4900 CC[35]
58		Lamb, Pigeon	P	0.09 JSU[34]	
59	Acetylcholine[36]	Man	P		6.6-8.2 μg

The BIOLOGY LIBRARY

One copy of each publication submitted for listing or review should be sent to the Editor, The AIBS Bulletin, 2101 Constitution Avenue, Washington, D. C. Reviews are limited to 300 words.

. . . Books Reviewed

Parasitic Infections in Man. Chapters by 14 investigators. Edited by HARRY MOST. Symposium No. 4, N. Y. Academy of Medicine. 229 pp. Columbia University Press, New York, 1951. $4.50.

Reviewed by Chas. W. Rees, Medical Parasitologist, National Institutes of Health, Bethesda, Maryland.

In this work, Paul F. Russell presents data indicating that "three-fourths of the world's population is without a sanitary environment." Parasitic diseases handicap the output of laborers, exact a huge monetary tax from buyers of tropical and subtropical products, greatly lessen the buying capacity of tropical and subtropical communities, and constitute a danger to temperate regions from continued infiltration of the parasites. Clay G. Huff shows that malaria is more than a disease of the blood. Pre-erythrocytic and exoerythrocytic stages of *Plasmodium* parasitize fixed tissues. James T. Culbertson discusses immunological mechanisms, and John Bozicevich, the immunological diagnosis of parasitic diseases.

Data are presented on the diagnosis of Chagas' disease, leishmaniasis, schistosomiasis, filariasis, echinococcosis, toxoplasmosis, trichinosis, and amoebiasis.

It is regrettable that William W. Frye, in his discussion of growth and metabolism of *Endamoeba histolytica*, omits so much pertinent literature. For example, cholesterol is a growth factor for *E. histolytica*, as indicated by Snyder and Meleney and confirmed by us at NIH with the use of egg-white medium. The effectiveness of B vitamins and of nonprotein substances that dialyze through cellophane is also demonstrated.

The principal obstacle to these investigations is our inability to cultivate the bloodstream stage of the parasites. The discussion by Ralph McKee and Quentin M. Geiman on the physiology and growth requirements of malarial parasites is a fine tribute to collaborative work at Harvard University, the University of Chicago, and Johns Hopkins University. Although indefinite cultivation of *Plasmodium* has not been attained, a sufficient number of transfers may be effected for chemotherapeutic studies on the parasite *in vitro*.

The comprehensive chapter by Ernest Bueding on metabolism of helminths compares favorably with the one by von Brand on the blood flagellates. Hamilton H. Anderson gives pharmacological evaluation of amoebacides with special emphasis on the trivalent thioarsenites. He presents no evidence for his requirement that an effective amoebacide must kill *E. histolytica* cysts *in vivo*. An agent that would kill the trophozoites would rid the patient of his infection. G. Robert Coatney's chapter on the status of antimalarial drugs will bring the student up to the minute on the chemotherapy of malaria. His work is a testimonial to the effectiveness of chemotherapeutic experiments on human volunteers and also to the chemists who synthesized the compounds. H. W. Brown's study on filariasis and other helminthic infections and Frederick J. Brady's paper on schistosomiasis have many data on chemotherapy with compounds containing antimony.

Principles of Field Crop Production. By JOHN H. MARTIN and WARREN H. LEONARD. 1176 pages, 305 figures. The Macmillan Company, New York, 1949. $6.00.

Reviewed by C. J. Willard, Department of Agronomy, Ohio State University

This general textbook on field crops takes up every field crop grown in the United States from corn and alfalfa to guayule and perilla. The first 330 pages are given over to general chapters on Crop Production, Crops and Environment, Tillage, Fertilizers and Rotations, Seeds and Seeding, Harvesting, Market Grain and Hay, Pastures and Weeds. Following this, the individual crops are discussed in three sections and are classified botanically.

Its coverage of grain crops is more complete than that of forage crops—about three-fourths of the space being devoted to grain crops and one-fourth to forage crops. The book is particularly strong in material concerning the Great Plains, an area neglected in previous crops texts. On the other hand, there is a tendency to neglect the problems of the Corn Belt and East and experiment station literature from those regions. The authors' specific recommendations are accurate and satisfactory.

The Appendix includes several tables of great reference value, especially an innovation in crops texts—a table on composition of plants and plant products. A table of "Seeding: Seed and Plant Characteristics" is one of the most extensive ever brought together. The majority of the more than 300 figures in the book are of real teaching value.

For those who want an up-to-date text on field crops in the United States, there is no better, more accurate, or more comprehensive text.

An Introduction to the Anatomy of Seed Plants. By ERNEST L. STOVER. 258 pp. D. C. Heath and Company, Boston, 1951. $4.00.

Reviewed by Robert D. Rappleye, Botany Department, University of Maryland

More than ever before, the "applied" fields of botany today are turning to plant anatomy in searching for answers to many problems. This renewed interest is reflected by the increased enrollment in anatomy courses. The requirements of these students from allied fields are unique since generally they must gain certain basic knowledge and the application of this knowledge in one concentrated course. Professor Stover has written this new text with these points in mind, and the results will be welcomed by many instructors. His use of the radish and beet to illustrate secondary growth in the hypocotyl and the sweet potato to illustrate a type of secondary growth in roots will delight the olericulturist.

The book varies somewhat in organization from the classical order of presentation. From the teacher's point of view, it is a thought-provoking approach. The author starts with a study of the embryo, progresses through the development of the seedling, and finally discusses the mature vegetative parts of the plant. The extensive treatment of the leaves is profitable. The chapter concerning vegetative propagation ("an application of the information gained in earlier chapters") will prove useful to a diversified group of readers. A working knowledge of wood and a review of the cellular structure may be gained by the use of the wood key at the end of the text.

Omission of a discussion of anatomy in relation to the reproductive portions of a plant will seem serious to many persons. Since the text was designed for use in either a quarter or a one-semester course, obviously some material had to be left out. This book is indeed an introduction to plant anatomy and should not be looked upon as, or judged in comparison with, a research text. The reviewer feels that Professor Stover has attained admirably the objectives he sets forth in his preface.

. . . Books Received

Anatomy of Seed Plants. By ERNEST L. STOVER. 258 pp. D. C. Heath and Company, Boston, 1951. $4.00.

Anatomy of the Gorilla. By WILLIAM K. GREGORY. 254 pp. Columbia University Press, New York, 1950. $15.00.

Cooperation among Animals with Human Implications (Rev.). By W. C. ALLEE. 227 pp. Henry Schuman, New York, 1951. $3.50.

Emigrations of Animals from the Sea. By A. S. PEARSE. 210 pp. The Sherwood Press, Dryden, New York, 1950. $5.00.

Fundamentals of Comparative Embryology of the Vertebrates (Rev.). By ALFRED F. HUETTNER. 229 pp. The Macmillan Company, New York, 1950. $5.50.

Glossary of British Flora. By H. GILBERT-CARTER. 79 pp. Cambridge University Press, New York, 1950. $1.75.

History of Biology (Rev.). By CHARLES SINGER. 571 pp. Henry Schuman, New York, 1950. $5.00.

Introduction to Animal Biology. By JOHN B. PARKER and JOHN J. CLARKE. 533 pp. The C. V. Mosby Company, St. Louis, 1949. $4.00.

Microbiology: General and Applied. By WILLIAM B. SARLES and others. 480 pp. Harper & Brothers, New York, 1951. $4.50.

Parasitic Infections in Man. By HARRY MOST. 229 pp. Columbia University Press, New York, 1951. $4.50.

Physical Basis of Mind: A Symposium. By PETER LASLETT. 79 pp. The Macmillan Company, New York, 1950. 75 cents.

Plant Growth Substances. By FOLKE SKOOG. 474 pp. University of Wisconsin Press, Madison, 1951. $6.00.

Smut Fungi. By GEORGE W. FISCHER. 377 pp. The Ronald Press Company, New York, 1951. $6.00.

Scholars from Abroad for U. S. Universities

THE Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C., calls attention of all biological science departments to the list of foreign biologists available to teach in American universities or colleges under the Fulbright Program for the academic year 1951-1952. Each scholar is eligible for the grant which covers round-trip transportation to final destination in the United States after satisfactory arrangements for lecturing have been completed. The committee will appreciate receiving a notice of an invitation issued to any scholar so that they may remove his name from the list. Additional information regarding professional qualifications will be sent upon request; please address all requests to the committee.

Agriculture

Soil Fertilization:

ROLF BJERKE, *Institute of Fertilization and Soil Management, Royal Agricultural College of Norway.*

General Phytopathology:

A. J. P. OORT, *Agricultural University, Wageningen, Netherlands.*

Biochemistry

Nutrition:

VINAYAK NARAYAN PATWARDHAN, *Nutrition Research Laboratories, Indian Council of Medical Research, Coonoor, India.*

Bacteriology

Medical Bacteriology:

HENRI WILLEM JULIUS, *Professor of Hygiene, Medical Faculty, State University of Utrecht, Netherlands.*

Pharmacology

Medical or Veterinary Pharmacology:

TAG ELDIN MANSOUR, *Faculty of Veterinary Medicine, Fouad I University, Egypt.*

Pharmacy, General and Historical:

ABDEL AZIZ ABDEL RAHMAN, *School of Pharmacy, Faculty of Medicine, Fouad I University, Egypt.*

Parasitology

Medical Parasitology and Entomology:

KHADIGE ZEIN EL-DINE (MRS.), *Faculty of Medicine, Fouad I Research Institute, Cairo, Egypt.*

Zoology

Experimental Embryology, Genetics, Advanced Zoology:

K. N. BAHL, *Professor of Zoology, Lucknow University, India.*

Invertebrates, Oligochaetology:

ATALLAH KHALAF EL-DUWEINI, *Senior Lecturer in Zoology, Fouad I University, Egypt.*

Protozoology, Comparative Physiology:

FOUAD KHALIL, *Assistant Professor of Experimental Zoology, Fouad I University, Egypt.*

Economic Entomology, Agriculture:

A. K. WAFA, *Assistant Professor, Faculty of Agriculture, Fouad I University, Egypt.*

Have YOU returned your National Scientific Register Questionnaire?

A.I.B.S. PLACEMENT SERVICE

Bacteriology

JA– 1. Ph.D., man, 29; teaching.
JA– 2. B.A., man, 34; commercial pos.
AP–103. B.S., man, 30; teaching and research.

Biochemistry

JA– 3. M.S., man, 29; teaching or research in agr. chem.
JA– 4. Ph.D., man, 29; teaching or research.
JA– 5. Ph.D., man, 52; teaching or research in plant biochem.

Biophysics

JA– 6. Ph.D., man, 28; research and teaching; radiobiology.

Botany

JA– 7. B.S., man, 36; teaching and research; cytogenetics.
JA– 8. Ph.D., man, 34; teaching and research; taxonomy, pathology.
JA– 9. Ph.D., man, 31; teaching; taxonomy, morphology.
AP– 67. Ph.D., man, 32; teaching or research; taxonomy.
AP– 68. Ph.D., woman; teaching and research; morphology, histology.
JA– 10. Ph.D., man, 32; teaching; genetics, zoology.
JA– 11. Ph.D., man, 25; teaching; morphology, taxonomy.
JA– 12. M.S., woman, 26; research; histology, microdissection.
JA– 13. M.S., man, 28; research or teaching; morphology, horticulture.
JA– 14. Ph.D., man, 39; research or teaching; cytology, morphology.
AP– 70. Ph.D. ('51), woman, 30; teaching or research; morphology.
AP– 73. Ph.D. ('51), man, 37; teaching; morphology and taxonomy.
AP– 75. M.A., woman, 56; teaching and research; taxonomy.
AP– 76. Ph.D., woman, 39; teaching or research; morphology, cytology.
AP– 77. M.S., man, 23; teaching or research; taxonomy.
AP– 78. Sc.D., man, 65; teaching and research; genetics, general botany.
JA– 15. M.S., man, 37; teaching; botany, biology.
JA– 16. Ph.D., man, 31; teaching or research; taxonomy.
AP– 88. Ph.D., man, 34; teaching and research; morphology, taxonomy.
AP– 89. Ph.D. ('51), man, 26; teaching and research; morphology, taxonomy.
AP– 99. Ph.D., woman, 28; teaching or research; anatomy, botany.
AP–102. Ph.D., man, 35; teaching or research; morphology, anatomy.
AP– 63. Sc.D., man, 45; teaching or research; ecology, physiology.
AP– 62. Ph.D., man, 32; teaching and research; physiology.
AP– 84. Ph.D., man, 38; teaching or research; physiology.
AP– 86. Ph.D. ('51), man, 29; teaching; physiology.
JA– 17. M.S., woman, 30; teaching, morphology, anatomy, physiology.
JA– 18. Ph.D., man 32; teaching, physiology, ecology.
JA– 19. Ph.D., man, 39; teaching or research, morphology, taxonomy, cytology.
JA– 20. Ph.D., man, 43; teaching or research, ecology, physiology.
JA– 21. Ph.D., woman, 24; teaching or research, ecology, cytology.
JA– 22. M.S., man, 26; teaching or research, ecology, physiology.
JA– 23. Ph.D., man, 32; teaching or research, physiology, limnology.
JA– 24. B.S., man, 25; teaching or research, physiology, ecology.
JA– 25. Ph.D., man, 24; teaching and research, physiology.
JA– 26. Ph.D., man, 34; teaching or research, physiology.
JA– 27. B.S., man, 28; teaching or research, physiology.
JA– 28. Sc.D., man, 29; research, mycology, toxicology.
JA– 29. M.S., man, 31; research, pathology (forage crops).
AP– 95. Ph.D., man, 41; teaching and research; mycology, bacteriology.
AP– 97. M.A., woman, 43; research; phytopathology.

Endocrinology

AP– 90. M.S. ('51), woman, 24; teaching and research.
JA– 30. M.S., man, 29; research or teaching; also biochemistry.
JA– 31. B.S., man, 25; research or teaching.

Entomology

AP– 65. Ph.D., man, 36; research and teaching.
JA– 32. M.S., man, 25; teaching assistant.
JA– 33. M.S., man, 31; teaching; invertebrate zoology.
JA– 34. Ph.D., man, 28; teaching or research; medical entomology.

Genetics

AP– 64. Ph.D., man, 37; teaching and research.
AP– 79. Ph.D., man, 32; teaching and research; zoology.
AP– 82. M.S., man, 23; research or teaching.
AP– 83. Ph.D., man, 36; teaching and research; biology.
AP– 91. Ph.D., man, 35; research and teaching.
AP–101. M.S., man, 27; research or teaching; microbiology.
JA– 35. Ph.D., man, 38; research, cytological genetics, biometry.
JA– 36. Dr. Agr., man, 46; plant breeding.
JA– 37. M.A., man, 29; teaching, microbiology, biochemical genetics.
JA– 38. Ph.D., woman, 30; research or teaching, yeast genetics.
JA– 39. B.S., man, 29; research and teaching, corn cytology.
JA– 40. Ph.D., man, 37; research and teaching, human genetics.
JA– 41. M.A., man, 27; teaching, plant genetics, physiology.
JA– 42. Ph.D., man, 30; teaching and research, zoology, biology.
JA– 43. Ph.D., man, 29; research and teaching, cytogenetics, microbiology, radiobiology.
JA– 44. Ph.D., man, 43; research in plant genetics, horticulture.
JA– 45. Ph.D., woman, 28; teaching, research, devel. genetics, entomology.
JA– 46. M.A., woman, 25; research and teaching, human genetics.
JA– 47. M.S., man, 27; research and teaching, horticulture.
JA– 48. Ph.D., woman, 34; research and teaching, genetics, cytology.

Horticulture

JA– 49. M.S., man, 32; research and teaching, vegetable production or processing.
JA– 50. M.S., man, 28; research, corn breeding.
JA– 51. M.S., man, 35; research, nutrition, general horticulture.
JA– 52. Ph.D., man, 26; teaching or research, soils.
JA– 53. Ph.D., man, 39; research and teaching, floriculture.
JA– 54. Ph.D., man, 31; teaching, ornamental horticulture.
AP– 87. Ph.D. ('51), man, 30; teaching, research, post-harvest physiol.

Parasitology

AP– 71. Ph.D., man, 37; teaching and research.
AP– 98. M.S., man, 29; teaching or research.
JA– 55. Ph.D., man, 34; teaching; general zoology.
JA– 56. Ph.D., man, 37; research or teaching; protozoology.

Zoology

JA– 57. B.S., man, 24; field biology or zoology.
JA– 58. Ph.D., woman, 61; teaching and research, embryology, pathology, histology.
JA– 59. M.S., man, 30; research and teaching, medical physics.
JA– 60. Ph.D., man, 31; research or teaching, wild life, ecology.
JA– 61. M.A., man, 25; research or teaching, zoology, ecology.
AP– 66. Ph.D., man, 34; teaching or research; marine invertebrates.
AP– 69. Ph.D., man, 29; teaching and research; invertebrates.
AP– 72. Ph.D. ('51); man, 28; teaching or research; ecology, physiology.
AP– 74. Ph.D. ('51); man, 26; teaching; general zoology.
AP– 80. Ph.D., man, 29; teaching and research; animal ecology.
AP– 81. Ph.D., man, 31; research and teaching; vertebrate zoology.
AP– 85. Sc.D., man, 40; teaching and research; zoology, anatomy.
AP– 92. Ph.D., man, 51; teaching and research; marine biology.
AP– 93. Ph.D., man, 36; teaching or research; wildlife, conservation.
AP– 94. Ph.D., man, 40; teaching and research; marine biology.
AP– 96. Ph.D. ('51), man, 33; teaching and research; histology, embryology.
AP–100. Ph.D., man, 30; teaching and research; invertebrates.
AP–104. Ph.D., man, 35; teaching or research; vertebrates.

The American Institute of Biological Sciences:

A HISTORICAL RÉSUMÉ—*continued from January*

AT THE Christmas (1946) meeting of the AAAS in Boston, a large number of the biological societies discussed a proposed association. A "Symposium on Proposed Plans for Union Involving Workers in the Biological Sciences" was held in Section G on December 27, 1946. A paper, "Shall Biologists Set Up a National Institute?" was read by Robert F. Griggs. Starting with a comparison of the crisis in physics which preceded the formation of the Institute of Physics, Dr. Griggs made an analogy between the lack of public appreciation for the biologist's contribution in World War II, the misuse of biological manpower, the need for a professional organization of biologists, possible courses of action, the necessity to combine the botanical and zoological sciences into a unified group, and the demand for an over-all institute to deal with common problems.

Answers in the January Article

What have physicists, chemists, and geologists done along similar lines?

How did the National Academy of Sciences and National Research Council come into existence?

What was the "Conference of the Committee on the Proposed Institute of American Biologists"?

Other papers were given by H. B. Tukey and R. E. Cleland. As an outcome of this meeting, more biologists became aware of the move to create the AIBS. At last the time had come to translate ideas into realities.

NRC Continues Discussion for a Biological Institute, March, 1947

The National Research Council called a meeting of the Advisory Committee on the American Institute of Biological Sciences at the NAS-NRC building on March 18, 1947. Fourteen biologists participated including E. G. Butler, chairman; Detlev W. Bronk, chairman of the NRC; Robert F. Griggs, chairman of the Division of Biology and Agriculture; Raymond L. Zwemer, executive secretary, NRC; H. B. Steinbach, serving as temporary executive secretary of AIBS; Robert Chambers; Ralph A. Cleland; Wallace Fenn; John S. Karling; Paul Kramer; John S. Nicholas; Neil Stevens; H. B. Tukey; and Paul Weiss. Initial discussions centered on proposals advanced by Dr. Bronk as to a policy for establishing the American Institute of Biological Sciences.

An agreement was made to establish an Organizing Board which would adopt a constitution to be submitted to the biological societies for ratification. It was recommended that an Organizing Board for the American Institute of Biological Sciences should be formed of one delegate from each member society of the Division of Biology and Agriculture and that members of the Advisory Committee should be included. Primary duty of this Organizing Board was to maintain close contact with the biological societies in order to inform them of the services which AIBS might render.

Various methods for financing the Institute were discussed. It was estimated that an annual income of $25,000 would be required to operate AIBS effectively. The consensus was that interested societies and individuals should provide sufficient funds to sustain the organization until it could become well organized. The need for AIBS to represent the interests of biologists and to maintain a body of individual scientific opinion which would not be influenced by the Government or other agencies was emphasized. A necessity was further stressed for the broader purposes of the AIBS, and that even though many short-range objectives in the form of special services to member societies should exist, a higher level objective should also be sought.

Drs. Cleland, Weiss, and Steinbach were appointed a subcommittee to prepare a new draft of the tentative constitution for the Organizing Board. Because it would be inappropriate for the Council to finance the Institute permanently, it was stressed that AIBS should become self-supporting as soon as possible.

AIBS Organization Meeting, April, 1947

On April 11, 1947, the Organizing Board of the American Institute of Biological Sciences met at the NAS-NRC building in Washington, D. C. In Dr. Butler's absence, Dr. Cleland was elected chairman of the meeting. Officers of societies constituting the Division of Biology and Agriculture were designated members of the Organizing Board. Representing the National Research Council were the following biologists from 27 societies:

American Association of Economic Entomologists, **S. B. Fracker**
American Dairy Science Association, **C. Y. Cannon**
American Genetic Association, **H. C. McPhee**
American Institute of Nutrition, **Walter C. Russell**
American Physiological Society, **Wallace O. Fenn**
American Phytopathological Society, **J. C. Walker**
American Society for Horticultural Science, **H. B. Tukey**
American Society of Agronomy, **M. A. McCall**

American Society of Animal Production, **Ralph W. Phillips**
American Society of Biological Chemists, **C. N. Hugh Long**
American Society of Ichthyologists and Herpetologists, **Karl P. Schmidt**
American Society of Mammalogists, **Remington Kellogg**
American Society of Parasitologists, **E. W. Price**
American Society of Plant Physiologists, **Paul J. Kramer**
American Society of Zoologists, **C. W. Metz**
American Veterinary Medical Association, **L. T. Giltner**
Botanical Society of America, **Ralph E. Cleland**
Ecological Society of America, **W. A. Dayton** *and* **H. A. Gleason**
Entomological Society of America, **R. W. Harned**
Genetics Society of America, **H. Bentley Glass**
Limnological Society of America, **Charles Mottley**
Mycological Society of America, **Neil E. Stevens**
Poultry Science Association, **T. C. Byerly**
Society for the Study of Development and Growth, **Paul Weiss**
Society of American Bacteriologists, **Joseph E. Smadel** *and* **William B. Sarles**
Society of American Foresters, **Henry Clepper** *and* **Hardy L. Shirley**
Wildlife Society, **Clarence Cottam** *and* **Lloyd W. Swift**

The Advisory Committee recommended a convening of the Organizing Board to launch the Institute in democratic fashion. Each member was reminded that he served in a double role. As a representative of his society, he was obligated to report to that society and to assist his group in considering the Institute with the understanding that he, as a representative, in no way bound his society officially. Also, as an individual member of the Organizing Board, he shared the task of formulating the Institute in sound general terms.

If the AIBS were to succeed, it was pointed out, it must represent the cooperative efforts and interests of all biological sciences, not the competitive interaction of special groups.

Recommendations were discussed on the operating structure of the new Institute. It was agreed that the Organizing Board, without committing its member societies, should (1) recommend establishment of an American Institute of Biological Sciences, (2) set up the American Institute of Biological Sciences within the National Research Council, (3) adopt the Institute form of organization in which control is placed in a Governing Board composed of representatives of societies since membership primarily is by societies, (4) represent as wide a variety of fundamental and applied sciences as practical through the Executive Committee, (5) accept the constitution and by-laws, as amended, and leave minor legal changes to the Executive Committee and the legal counsel of the National Academy of Sciences, (6) authorize a campaign by the executive secretary to raise funds in the name of AIBS, (7) have the Executive Committee of the Organizing Board consist of the subcommittee on the constitution, and (8) formulate through the Executive Committee a provision for starting AIBS upon ratification of the constitution and by-laws by ten societies eligible for charter membership and asking approval by the National Academy of Sciences of the first Governing Board of the new Institute.

A letter written by the temporary executive secretary, H. B. Steinbach, was mailed to members of the national societies in the biological sciences outlining action taken by the Organizing Board. The following paragraphs are quoted from this letter:

> Your Society is invited to become a charter member of the American Institute of Biological Sciences. On April 11, 1947, an Organizing Board representing the constituent societies of the Division of Biology and Agriculture was convened by the National Research Council. The Organizing Board made specific recommendations for action, adopted a provisional constitution and by-laws, and urged that the organization be brought to the immediate attention of the societies eligible for charter membership.
>
> The American Institute of Biological Sciences is ready. It is designed to serve those common interests of the biological sciences that can best be dealt with by cooperative action. Active functioning will start when ten or more eligible societies have ratified the provisional constitution and by-laws, and when the Governing Board is convened . . .
>
> The urgency of the present situation is worthy of note. You are asked to study this memorandum and the enclosed material in order that you may assist your society to take immediate and thoughtful action. Other organizations have, in the past, attempted to serve the interests of workers in the biological sciences on a general scale. For the most part they have failed. The need now is greater than ever before, and the Institute has the great advantage, in terms of stability and prestige, of being built within the structure of the National Research Council.
>
> A Member Society will continue to serve the direct scientific interests of its members as it has done in the past. The Institute will in no way pre-empt the interests of Member Societies but, rather will foster them by facilitating cooperative efforts, when desired, with closely allied groups. It will effectively represent the interests of workers in the biological sciences. . . . Individual workers should also benefit directly by reducing the duplication of efforts that now exists.
>
> The American Institute of Biological Sciences is designed to serve and enhance the broad general interests of the biological sciences. It will represent the biological sciences before such agencies as the proposed National Science Foundation and other international organizations. In the same way, it will help to guide such agencies so that the greatest mutual benefit will be derived. Through information and representation services, individual workers in the biological sciences will be better able to plan their programs, especially those concerning such long-range matters as training of new personnel. . . .
>
> Great advances in the physical and chemical sciences have led to the disruption of established patterns of life. The sound adjustment of these social patterns can be accomplished only through the fields of research served by the biological sciences. The subjects of the biological sciences, in effect, comprise a study of the ecology of man the animal as well as the basic attributes of all living things. Upon the foundation of these biological sciences, the new social relationships of man must be adjusted. The responsibility is great.

Thus the call was sounded, and the American Institute of Biological Sciences was on the march.

A temporary executive committee of AIBS met at the University of Chicago in October, 1947. Its business consisted mostly of reporting on society mem-

bership. Six societies, at their annual meetings, had decided in favor of joining the new Institute. They were the American Physiological Society, American Society of Mammalogists, American Society of Ichthyologists and Herpetologists, the Poultry Science Association, the Society of American Bacteriologists, and the Society for the Study of Development and Growth. Fifteen other societies had been contacted but had not held their annual meetings. Three societies shelved the question for consideration at their next annual meetings. By the end of 1947, however, 12 societies had confirmed their membership, and AIBS was established.

AIBS Begins to Function, February, 1948

Final step in forming the American Institute of Biological Sciences was taken at the National Research Council on February 20, 1948. This was the date of the first meeting of the Governing Board. Dr. Cleland presided as chairman of the temporary executive committee of the Organizing Board.

Dr. Bronk outlined briefly the history of the creation of the Institute stating that assistance in forming the AIBS had been authorized by the executive groups of the Academy and the Council, which also approved a request that the proposed Institute be organized within the framework of the Council. Activities of the Institute might thereby be assisted through cooperation with other fields of science and other scientific activities of NRC. Assuring the Board that the Council was willing to recognize the existence of the American Institute of Biological Sciences after its requirements were met, Dr. Bronk stated that the required number of societies had joined AIBS to permit its inauguration. Official existence of the AIBS was thereby announced.

At the close of this meeting the executive committee of the Governing Board was selected. It consisted of Dr. Cleland as chairman, Dr. Butler as vice-chairman, and Drs. W. O. Fenn, T. C. Byerly, and F. P. Cullinan as the other members. The Executive Committee was authorized to choose an executive secretary.

The American Institute of Biological Sciences was launched with the "best wishes" from all the biologists who had helped during the long period of its planning and building.

CLARENCE J. HYLANDER
Executive Secretary

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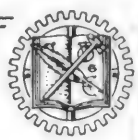

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